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ABSTRACT

This document, which reflects Mississippi's statutory requirement that instructional programs be based on core curricula and performance-based assessment, contains outlines of the instructional units required in local instructional management plans and daily lesson plans for two secondary-level courses in brick, block, and stonemasonry: brick, block, and stonemasonry I and II. Presented first are a program description and course outlines. Section I contains curriculum frameworks for both courses, and section II contains outlines of the instructional units required in each course. The first course consists of the following units: orientation, leadership/personal development, safety, basic tools and equipment, masonry, mortar, wall layout, and concrete. The second course contains these units: orientation, advanced leadership and personal development, safety, power tools and equipment, wall layout, anchors and reinforcement, basic blueprint reading and estimating, and stonemasonry. Each unit includes suggested time on tasks, competencies and objectives, teaching strategies, assessment strategies, and resources. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (MN)

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ED 397 302

Mississippi Curriculum Framework for Brick, Block, and Stonemasonry

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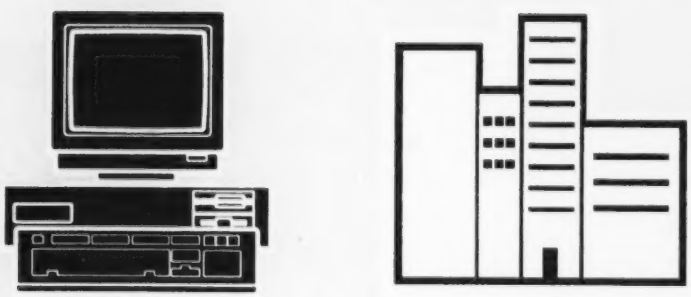

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Secondary Vocational and Technical Education 1996

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July 30, 1996

MISSISSIPPI

CURRICULUM FRAMEWORK

FOR

BRICK, BLOCK, AND STONEMASONRY

(Program CIP: 46.0101 - Mason and Tile Setter)

July 30, 1996

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FOREWORD

The courses in this document reflect the following statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended:

> The State Department of Education shall provide an instructional program and establish guidelines and procedures for managing such programs in the public schools as part of the State Program of Educational Accountability and Assessment of Performance. . .
>
> The department shall provide that such program or guidelines . . . are enforced through the performance-based accreditation system.
>
> The local school board must adopt the objectives that will form the core curriculum that will be systematically delivered throughout the district.
>
> Standards for student performance must be established for each core objective in the local program and those standards establish the district's definition of mastery for each objective.
>
> There shall be an annual review of student performance in the instructional program against locally established standards.

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - The number of days of instruction that should be required to teach the competencies and objectives of the unit. For secondary occupational programs, a "day" represents a two-period block of instruction.
- Competencies and Suggested Objectives
  - A **Competency** represents a general concept of performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to master all competencies in the curriculum framework in order to satisfactorily complete the course.
  - The **Suggested Objectives** represent the enabling and supporting knowledge and performances that will indicate mastery of the competency.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each suggested objective. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.

- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include classroom discussions, laboratory exercises, and student assignments. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Suggested Resources - This section indicates some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

The following guidelines were used in developing the curriculum framework in this document and should be considered in developing local instructional management plans and daily lesson plans:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For a one-year course, this means that the content of the existing units of instruction should represent approximately 135 days of instruction. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional units of instruction within the course related to topics not found in the state framework.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep Initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including work site learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the units of instruction within a course is left to the discretion of the local district. Naturally, foundation units related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other units related to specific skill areas in the course, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

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PROGRAM DESCRIPTION

BRICK, BLOCK, AND STONEMASONRY
(Program CIP: 46.0101 - Mason and Tile Setter)

Brick, Block, and Stonemasonry is an instructional program that orients an individual to the field of masonry. Study in the course allows an individual to prepare for employment and/or continued education in the masonry field. Included in Brick, Block, and Stonemasonry I are units of study in student orientation, leadership and personal development, safety, basic tools and equipment, masonry units, wall layout, and concrete. Included in Brick, Block, and Stonemasonry II are units of study in orientation, advanced leadership and personal development, safety, power tools and equipment, wall layout, anchors and reinforcement, basic blueprint reading and estimating, and stonemasonry.

COURSE OUTLINE

BRICK, BLOCK, AND STONEMASONRY I

Unit #	Unit Name	No. of Days
Unit 1	Orientation	5
Unit 2	Leadership and Personal Development	5
Unit 3	Safety	10
Unit 4	Basic Tools and Equipment	25
Unit 5	Masonry Unit	20
Unit 6	Mortar	15
Unit 7	Wall Layout	35
Unit 8	Concrete	20

BRICK, BLOCK, AND STONEMASONRY II

Unit #	Unit Name	No. of Days
Unit 1	Orientation	2
Unit 2	Advanced Leadership and Personal Development	5
Unit 3	Safety (Review)	5
Unit 4	Power Tools and Equipment	30
Unit 5	Wall Layout	48
Unit 6	Anchors and Reinforcement	25
Unit 7	Basic Blueprint Reading and Estimating	15
Unit 8	Stonemasonry	5

SECTION I:

CURRICULUM FRAMEWORK

FOR

BRICK, BLOCK, AND STONEMASONRY

CURRICULUM FRAMEWORK

Course Name: Brick, Block, and Stonemasonry I

Course CIP Code: 46.0102

Course Description: Brick, Block, and Stonemasonry I is an instructional program that orients an individual to the field of masonry. Study in the course allows an individual to prepare for employment and/or continued education in the masonry field. Included are units of student orientation, leadership and personal development, safety, basic tools and equipment, masonry units, wall layout, and concrete. (2 - 2½ Carnegie Units, depending upon time spent in the course).

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
   a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
   a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
   b. Describe basic employee responsibilities.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
3. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
   a. State procedures of leadership used in organizational meetings to reach an agreement in an orderly manner.
   b. Describe the purposes of VICA.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP3, WP6
4. Identify desirable personal behavior and characteristics.
   a. Identify desirable personality traits when serving the public.
   b. Identify desirable personality traits when communicating with employees, supervisors, and other employees.
   c. Identify desirable characteristics of the personal work ethic.

   Related Academic Topics (See Appendix A): C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6

5. Identify legal requirements for participation in the occupation.
   a. Describe ways to avoid legal liability problems in the occupation.

   Related Academic Topics (See Appendix A): C3, C4, C6
   Workplace Skills (See Appendix B): WP4, WP6
6. Describe personal safety rules for working in the masonry industry.
   a. Identify and apply terms and definitions for safety.
   b. Identify provisions of the OSHA Act of 1970.
   c. Identify OSHA inspections and citations.
   d. Identify why citations are given.
   e. Identify accidents, their causes, and their prevention.
   f. Identify general safety procedures.
   g. Identify causes of electrical hazards.
   h. Identify proper methods for moving heavy items.
   i. Identify and apply emergency first aid, if necessary.
   j. Identify and apply ABC's of CPR.
   k. Apply eye safety procedures.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3
7. Demonstrate the ability to identify and use the tools and equipment.
   a. Match terms associated with hand tools to their correct definitions.
   b. Distinguish between modular spacing rule and standard brick spacing rule.
   c. Identify basic tools and proper use.
   d. Identify and describe the correct way to hold a brick trowel.
   e. Measure, mark, and cut brick and block to specifications.
   f. List basic rules concerning care of the level.
   g. Use a framing square to lay out a wall corner to specifications.
   h. Describe the measuring instruments and guides used to lay out masonry work.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3
8. Demonstrate the ability to care for the tools and equipment.
   a. List the accepted methods to care for tools and equipment.
   b. Clean tools and equipment after use.
   c. Store tools and equipment in an accepted manner.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3
9. Match terms associated with masonry units to their correct definitions.
   a. Name the different types of brick, block, and stone.
   b. Label parts of a brick, block, and stone.
   c. Identify the positions as they appear in a wall.

   Related Academic Topics (See Appendix A): C1, C4, C5, M1
   Workplace Skills (See Appendix B): WP2, WP3
10. Lay out a brick wall using the dry bond method to specifications.
    a. Set up the work area.

b. Establish the building line.
c. Dry bond the first course.
d. Mark the bond.

Related Academic Topics (See Appendix A): C1, C4, C5, M1, M3
Workplace Skills (See Appendix B): WP2, WP3, M6

11. Lay out a block wall using the dry bond method to specifications.
    a. Set up the work area.
    b. Establish the building line.
    c. Dry bond the first course.
    d. Mark the bond.

    Related Academic Topics (See Appendix A): C1, C4, C5, M1, M3
    Workplace Skills (See Appendix B): WP2, WP3, M6
12. Lay out a stone wall using the dry bond method to specifications.
    a. Set up the work area.
    b. Establish the building line.
    c. Spread the stone and check for shape.
    d. Select the larger stones and place in dry bed course.
    e. Trim stone as necessary.

    Related Academic Topics (See Appendix A): C1, C4, C5, M1, M3
    Workplace Skills (See Appendix B): WP2, WP3, WP6
13. Demonstrate the ability to identify factors concerning mortar.
    a. Match terms associated with mortar to their correct definitions.
    b. List ingredients used in mortar.
    c. List factors to consider when mixing mortar.
    d. List purposes of mortar.
    e. List factors that affect mortar consistency.
    f. Arrange in order steps used to mix mortar by hand.
    g. Arrange in order steps for using a mechanical mixer to mix mortar.

    Related Academic Topics (See Appendix A): C1, C4, C5,
    Workplace Skills (See Appendix B): WP2, WP3, WP5
14. Demonstrate the ability to mix and apply mortar to specifications.
    a. Mix a batch of mortar by hand to specifications.
    b. Mix a batch of mortar using a mechanical mixer to specifications.
    c. Spread mortar to specifications.

    Related Academic Topics (See Appendix A): C1, C3, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3, WP5, WP6
15. Identify terms associated with wall layout.
    a. Match terms associated with wall layout.
    b. List types of wall bonds.
    c. List types of leads.

    Related Academic Topics (See Appendix A): C1, C3, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3, WP5
16. Build a wall section according to specifications.
    a. Lay out a wall bond.

b. Build leads to specifications.
c. Construct wall between leads.

Related Academic Topics (See Appendix A): C1, C3, C4, C5
Workplace Skills (See Appendix B): WP2, WP3, WP6

17. Demonstrate the ability to explain terms, tools, and equipment associated with concrete.
    a. Match terms associated with concrete finishing.
    b. Describe tools and equipment needed to pour and finish concrete.
    c. Apply safety rules in concrete pouring and finishing.
    d. Identify the types of concrete finishing.

    Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6
    Workplace Skills (See Appendix B): WP2, WP3, WP5
18. Demonstrate the ability to perform procedures used in pouring and finishing concrete.
    a. Estimate material.
    b. Erect forms for concrete.
    c. Place waterproof membrane and steel in form.
    d. Pour and finish concrete according to specifications.

    Related Academic Topics (See Appendix A): C1, C2, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3, WP5

CURRICULUM FRAMEWORK

Course Name: Brick, Block, and Stonemasonry II

Course CIP Code: 46.0190

Course Description: Brick, Block, and Stonemasonry II is a continuation of Brick, Block, and Stonemasonry I, and allows an individual to prepare for employment and/or continued education in the field of masonry. Included are units of study in orientation, advanced leadership and personal development, safety, power tools and equipment, wall layout, anchors and reinforcement, basic blueprint reading and estimating, and stonemasonry. (2 - 2½ Carnegie Units, depending upon time spent in the course).

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
   a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
   a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
   b. Describe basic employee responsibilities.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
3. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
   a. State procedures of leadership used in organizational meetings to reach an agreement in an orderly manner.
   b. Describe the purposes of VICA.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP3, WP6
4. Identify desirable personal behavior and characteristics.
   a. Identify desirable personality traits when serving the public.
   b. Identify desirable personality traits when communicating with employees, supervisors, and other employees.
   c. Identify desirable characteristics of the personal work ethic.

   Related Academic Topics (See Appendix A): C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6

5. Identify legal requirements for participation in the occupation.
   a. Describe ways to avoid legal liability problems in the occupation.
   Related Academic Topics (See Appendix A): C3, C4, C6
   Workplace Skills (See Appendix B): WP4, WP6
6. Describe personal safety rules for working in the masonry industry.
   a. Identify and apply terms and definitions for safety.
   b. Identify provisions of the OSHA Act of 1970.
   c. Identify OSHA inspections and citations.
   d. Identify why citations are given.
   e. Identify accidents, their causes, and their prevention.
   f. Identify general safety procedures.
   g. Identify causes of electrical hazards.
   h. Identify proper methods for moving heavy items.
   i. Identify and apply emergency first aid, if necessary.
   j. Identify and apply ABC's of CPR.
   k. Apply eye safety procedures.
   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3
7. Demonstrate the ability to safely use power tools.
   a. Identify safety rules when using power tools.
   b. List the parts of the brick saw.
   c. Identify types of saw blades.
   d. Identify safety rules when using the mortar mixer.
   e. Explain the use and care of the mortar mixers.
   f. Explain the use and care of the power grinder.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP4
8. Demonstrate the ability to safely use masonry equipment.
   a. Explain the care and use of the mortar boards.
   b. Explain the care and use of various types of wheelbarrows.
   c. Explain the care and use of the mortar pan and stand.
   d. Explain the care and use of scaffolding.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP6
9. Demonstrate the ability to lay out and build a masonry wall.
   a. Match terms associated with wall layout.
   b. Distinguish between a load-bearing and non-loadbearing wall.
   c. Name the types of wall layouts.
   d. List the bond in wall layout.
   e. Identify a cavity wall.
   f. Identify the methods of layout.
   g. Build a block and/or brick lead to specifications.
   h. Lay up a block and/or brick wall using steel tape bonding.

Related Academic Topics (See Appendix A): C1, C4, C5, M2, M3
Workplace Skills (See Appendix B): WP2, WP3, WP5, WP6

10. Demonstrate the ability to identify and use anchors and reinforcement in masonry walls.
    a. Match terms associated with anchors and reinforcement.
    b. Identify types of anchors and reinforcement used in masonry units.
    c. List reasons for using anchors and reinforcement in masonry units.
    d. Construct a masonry wall using anchors and joint reinforcement.

    Related Academic Topics (See Appendix A): C1, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3
11. Demonstrate the ability to identify basic blueprint reading terminology.
    a. Match terms associated with basic blueprint reading.
    b. Identify the types of lines used on blueprints.
    c. Label drawing symbols.
    d. Match abbreviations commonly used on blueprints.
    e. Identify commonly used scales for blueprints.

    Related Academic Topics (See Appendix A): C1, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3
12. Demonstrate the ability to estimate material for a masonry project.
    a. Match terms associated with estimating material.
    b. List the rule-of-thumb guidelines for estimating.
    c. Estimate material for a brick job.
    d. Estimate material for a block job.
    e. Estimate material for a stone job.
    f. Estimate material for a given job using a computer.

    Related Academic Topics (See Appendix A): C1, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3
13. Demonstrate the ability to identify and apply techniques of stonemasonry.
    a. Match terms associated with stonemasonry.
    b. Define the classifications of stone.
    c. Define the uses of stone in the masonry field.
    d. Describe the various surface finishes of stone.
    e. Construct a stone project.

    Related Academic Topics (See Appendix A): C1, C4, C5
    Workplace Skills (See Appendix B): WP2, WP3

SECTION II:

CURRICULUM GUIDE

FOR

BRICK, BLOCK, AND STONEMASONRY

BRICK, BLOCK, AND STONEMASONRY I

BRICK, BLOCK, AND STONEMASONRY I
UNIT 1: ORIENTATION **(5 days)**

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
   a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
   a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
   b. Describe basic employee responsibilities.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Describe local program and vocational center policies and procedures.*
   a. *Review and discuss applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
   a. *Have students survey job opportunities through employer visits, resource person(s), telephone calls, and/or field trip with report to the class.*
   b. *Have resource person speak to students regarding requirements for the jobs, such as punctuality, customer relations, following directions, etc.*

Suggested Assessment Strategies:

1. *Describe local program and vocational center policies and procedures.*
   a. *Test on applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
   a. *Oral and written report on employment opportunities.*
   b. *Oral and written report on employee responsibilities.*

Suggested References:

Local Administrative Policies and Procedures

BRICK, BLOCK, AND STONEMASONRY I
UNIT 2: LEADERSHIP AND PERSONAL DEVELOPMENT **(5 days)**

Competencies and Suggested Objectives:

1. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
   a. State procedures of leadership used in organizational meetings to reach an agreement in an orderly manner.
   b. Describe the purposes of VICA.
   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP3, WP6
2. Identify desirable personal behavior and characteristics.
   a. Identify desirable personality traits when serving the public.
   b. Identify desirable personality traits when communicating with employees, supervisors, and other employees.
   c. Identify desirable characteristics of the personal work ethic.
   Related Academic Topics (See Appendix A): C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
3. Identify legal requirements for participation in the occupation.
   a. Describe ways to avoid legal liability problems in the occupation.
   Related Academic Topics (See Appendix A): C3, C4, C6
   Workplace Skills (See Appendix B): WP4, WP6

Suggested Teaching Strategies:

1. *State procedures of leadership to reach an agreement in an orderly manner and personal development opportunities provided students by VICA.*
   a. Allow students to attend a formal meeting to observe "Robert's Rules of Order" in operation. Give handout on procedures. Encourage classroom discussion on procedures.
   b. Discuss leadership opportunities.
2. *Identify desirable personal behavior and characteristics.*
   a. Conduct a class discussion involving personality traits.
   b. Compare public personality traits versus employee personality traits.
   c. Have students interview someone outside school to identify the application of personal work ethics.
3. *Identify legal requirements for participation in the occupation.*
   a. Discuss with students liabilities that may be incurred while not meeting standards and ethics.

Suggested Assessment Strategies:

1. *State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by VICA.*
   a. *Oral and/or written review.*
   b. *Oral and/or written review.*
2. *Identify desirable personal behavior and characteristics.*
   a. *Have students role play desirable personality traits.*
   b. *Oral and/or written review.*
   c. *Oral and/or written review.*
3. *Identify legal requirements for participation in the occupation.*
   a. *Oral and/or written review.*

Suggested References:

VICA. Official Guide for VICA. Washington, D.C.: Vocational Industrial Clubs of America (VICA).

BRICK, BLOCK, AND STONEMASONRY I
UNIT 3: SAFETY **(10 days)**

Competencies and Suggested Objectives:

1. Describe personal safety rules for working in the masonry industry.
   a. Identify and apply terms and definitions for safety.
   b. Identify provisions of the OSHA Act of 1970.
   c. Identify OSHA inspections and citations.
   d. Identify why citations are given.
   e. Identify accidents, their causes, and their prevention.
   f. Identify general safety procedures.
   g. Identify causes of electrical hazards.
   h. Identify proper methods for moving heavy items.
   i. Identify and apply emergency first aid, if necessary.
   j. Identify and apply ABC's of CPR.
   k. Apply eye safety procedures.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Describe personal safety rules for working in the masonry industry.*
   a. Review and discuss applicable rules and regulations on safety.
   b. Have students review the lab and classroom to indicate any safety violations.
   c. Describe hazards of electrical shock including effects of current, shock avoidance techniques, and shock treatment procedures.
   d. Describe accident procedures including getting help, basic first aid, CPR, and accident report form.
   e. Describe the proper procedure for moving heavy items.
   f. Review the basic requirements of OSHA.
   g. Review the school's policy on general safety procedures.

Suggested Assessment Strategies:

1. *Describe personal safety rules for working in the masonry industry.*
   a. Oral and/or written exercise.
   b. Oral and/or written exercise.
   c. Oral and/or written exercise.
   d. Oral and/or written exercise.
   e. Oral and/or written exercise.

f. Oral and/or written exercise.
g. Oral and/or written exercise.

Suggested References:

Local Publication, Safety Handbook

BRICK, BLOCK, AND STONEMASONRY I
UNIT 4: BASIC TOOLS AND EQUIPMENT **(25 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to identify and use the tools and equipment.
   a. Match terms associated with hand tools to their correct definitions.
   b. Distinguish between modular spacing rule and standard brick spacing rule.
   c. Identify basic tools and proper use.
   d. Identify and describe the correct way to hold a brick trowel.
   e. Measure, mark, and cut brick and block to specifications.
   f. List basic rules concerning care of the level.
   g. Use a framing square to lay out a wall corner to specifications.
   h. Describe the measuring instruments and guides used to lay out masonry work.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3
2. Demonstrate the ability to care for the tools and equipment.
   a. List the accepted methods to care for tools and equipment.
   b. Clean tools and equipment after use.
   c. Store tools and equipment in an accepted manner.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Demonstrate the ability to identify and use the tools and equipment.*
   a. Discussion and handouts.
   b. Discussion and handouts.
   c. Discussion and handouts.
   d. Discussion and handouts.
   e. Demonstration of measuring, marking, and cutting brick and block.
   f. Discussion and handouts.
   g. Demonstration of use of framing square.
2. *Discussion and handouts.*
   a. Demonstration of cleaning tools and equipment.
   b. Demonstration of storing tools and equipment.

Suggested Assessment Strategies:

1. *Demonstrate the ability to identify and use the tools and equipment.*
   a. Written/oral test.
   b. Written/oral test.

c. Written/oral test.
d. Written/oral test.
e. Practical application of measuring, marking, cutting brick and block.
f. Written test.
g. Practical application on using a framing square.
h. Oral test.

2. *Demonstrate the ability to care for the tools and equipment.*
   a. Written test.
   b Practical application of cleaning tools and equipment.
   c. Practical application of storing tools and equipment.

Suggested References:

BIA. Bricklaying, Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY I
UNIT 5: MASONRY UNIT **(20 days)**

Competencies and Suggested Objectives:

1. Match terms associated with masonry units to their correct definitions.
   a. Name the different types of brick, block, and stone.
   b. Label parts of a brick, block, and stone.
   c. Identify the positions as they appear in a wall.
   Related Academic Topics (See Appendix A): C1, C4, C5, M1
   Workplace Skills (See Appendix B): WP2, WP3
2. Lay out a brick wall using the dry bond method to specifications.
   a. Set up the work area.
   b. Establish the building line.
   c. Dry bond the first course.
   d. Mark the bond.
   Related Academic Topics (See Appendix A): C1, C4, C5, M1, M3
   Workplace Skills (See Appendix B): WP2, WP3, M6
3. Lay out a block wall using the dry bond method to specifications.
   a. Set up the work area.
   b. Establish the building line.
   c. Dry bond the first course.
   d. Mark the bond.
   Related Academic Topics (See Appendix A): C1, C4, C5, M1, M3
   Workplace Skills (See Appendix B): WP2, WP3, M6
4. Lay out a stone wall using the dry bond method to specifications.
   a. Set up the work area.
   b. Establish the building line.
   c. Spread the stone and check for shape.
   d. Select the larger stones and place in dry bed course.
   e. Trim stone as necessary.
   Related Academic Topics (See Appendix A): C1, C4, C5, M1, M3
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Match the terms associated with masonry units to their correct definitions.*
   a. Discussion and handouts.
   b. Discussion and handouts.
   c. Discussion and handouts.
2. *Lay out a brick wall using th dry bond method to specifications.*
   a. Demonstrate how to set up the work area.
   b. Demonstrate the setting of a building line.

c. *Demonstrate the first course.*
d. *Demonstrate marking the bond.*

3. *Lay out a block wall using the dry bond method to specifications.*
   a. *Demonstrate how to set up the work area.*
   b. *Demonstrate the setting of a building line.*
   c. *Discussion.*
   d. *Demonstrate marking the bond.*
4. *Lay out a stone wall using the dry bond method to specifications.*
   a. *Demonstrate how to set up the work area.*
   b. *Demonstrate the setting of a building line.*
   c. *Discussion.*
   d. *Demonstration.*
   e *Demonstration.*

Suggested Assessment Strategies:

1. *Match terms associated with masonry units to their correct definitions.*
   a. *Oral test.*
   b. *Written test.*
   c. *Oral test.*
2. *Lay out a brick wall using the dry bond method to specifications.*
   a. *Application.*
   b. *Application.*
   c. *Application.*
   d. *Application.*
3. *Lay out a block wall using the dry bond method to specifications.*
   a. *Application.*
   b. *Application.*
   c. *Application.*
   d. *Application.*
4. *Lay out a stone wall using the dry bond method to specifications.*
   a. *Application.*
   b. *Application.*
   c. *Application.*
   d. *Application.*
   e. *Application.*

Suggested References:

BIA. Bricklaying, Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY I
UNIT 6: MORTAR **(15 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to identify factors concerning mortar.
   a. Match terms associated with mortar to their correct definitions.
   b. List ingredients used in mortar.
   c. List factors to consider when mixing mortar.
   d. List purposes of mortar.
   e. List factors that affect mortar consistency.
   f. Arrange in order steps used to mix mortar by hand.
   g. Arrange in order steps for using a mechanical mixer to mix mortar.
   Related Academic Topics (See Appendix A): C1, C4, C5,
   Workplace Skills (See Appendix B): WP2, WP3, WP5
2. Demonstrate the ability to mix and apply mortar to specifications.
   a. Mix a batch of mortar by hand to specifications.
   b. Mix a batch of mortar using a mechanical mixer to specifications.
   c. Spread mortar to specifications.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP5, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to identify factors concerning mortar.*
   a. Discussion and handouts.
   b. Discussion and handouts.
   c. Discussion and handouts.
   d. Discussion and handouts.
   e. Discussion and handouts.
   f. Demonstration.
   g. Demonstration.
2. *Demonstrate the ability to mix and apply mortar to specifications.*
   a. Demonstration.
   b. Demonstration.
   c. Demonstration.

Suggested Assessment Strategies:

1. *Demonstrate the ability to identify factors concerning mortar.*
   a. Written.
   b. Written/oral test.
   c. Written/oral test.

d. Written/oral test.
e. Written/oral test.
f. Application.
g. Application.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY I
UNIT 7: WALL LAYOUT **(35 days)**

Competencies and Suggested Objectives:

1. Identify terms associated with wall layout.
   a. Match terms associated with wall layout.
   b. List types of wall bonds.
   c. List types of leads.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP5
2. Build a wall section according to specifications.
   a. Lay out a wall bond.
   b. Build leads to specifications.
   c. Construct wall between leads.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Identify terms associated with wall layout.*
   a. Discussion and handout material
   b. Discussion and handouts.
   c Discussion and handouts.
2. *Build a wall section according to specifications.*
   a. Practical exercise in laying out a wall.
   b. Practical exercise in building leads.
   c. Practical exercise in constructing a wall.

Suggested Assessment Strategies:

1. *Identify terms associated with wall layout.*
   a. Written/oral test.
   b. Written/oral test.
   c. Written/oral test.
2. *Build a wall section according to specifications.*
   a. Provide plans on layout and apply skills of layout.
   b. Practical application.
   c. Practical application.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY I
UNIT 8: CONCRETE **(20 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to explain terms, tools, and equipment associated with concrete.
   a. Match terms associated with concrete finishing.
   b. Describe tools and equipment needed to pour and finish concrete.
   c. Apply safety rules in concrete pouring and finishing.
   d. Identify the types of concrete finishing.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP5
2. Demonstrate the ability to perform procedures used in pouring and finishing concrete.
   a. Estimate material.
   b. Erect forms for concrete.
   c. Place waterproof membrane and steel in form.
   d. Pour and finish concrete according to specifications.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP5

Suggested Teaching Strategies:

1. *Demonstrate the ability to explain terms, tools, and equipment associated with concrete.*
   a. Discussion and handouts.
   b. Demonstration and handouts.
   c. Discussion and handouts.
   d. Discussion and handouts.
2. *Demonstrate the ability to perform procedures used in pouring and finishing concrete.*
   a. Demonstration and handouts.
   b. Demonstration and handouts.
   c. Demonstration and handouts.
   d. Demonstration and handouts.

Suggested Assessment Strategies:

1. *Demonstrate the ability to explain terms, tools, and equipment associated with concrete.*
   a. Written/oral test.
   b. Written/oral test.

   c. *Written test.*
   d. *Written/oral test.*
2. *Demonstrate the ability to perform procedures used in pouring and finishing concrete.*
   a. *Written test.*
   b. *Application.*
   c. *Application.*
   d. *Application.*

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY II

BRICK, BLOCK, AND STONEMASONRY II
UNIT 1: ORIENTATION **(2 days)**

Competencies and Suggested Objectives:

1. Describe local program and vocational center policies and procedures.
   a. Describe local program and vocational center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Describe employment opportunities and responsibilities.
   a. Describe employment opportunities including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.
   b. Describe basic employee responsibilities.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Describe local program and vocational center policies and procedures.*
   a. *Review and discuss applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
   a. *Have students survey job opportunities through employer visits, resource person(s), telephone calls, and/or field trip with report to the class.*
   b. *Have resource person speak to students regarding requirements for the jobs, such as punctuality, customer relations, following directions, etc.*

Suggested Assessment Strategies:

1. *Describe local program and vocational center policies and procedures.*
   a. *Test on applicable rules and regulations.*
2. *Describe employment opportunities and responsibilities.*
   a. *Oral and written report on employment opportunities.*
   b. *Oral and written report on employee responsibilities.*

Suggested References:

Local Administrative Policies and Procedures

BRICK, BLOCK, AND STONEMASONRY II
UNIT 2: ADVANCED LEADERSHIP AND PERSONAL DEVELOPMENT (5 days)

Competencies and Suggested Objectives:

1. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
   a. State procedures of leadership used in organizational meetings to reach an agreement in an orderly manner.
   b. Describe the purposes of VICA.
   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1, WP3, WP6
2. Identify desirable personal behavior and characteristics.
   a. Identify desirable personality traits when serving the public.
   b. Identify desirable personality traits when communicating with employees, supervisors, and other employees.
   c. Identify desirable characteristics of the personal work ethic.
   Related Academic Topics (See Appendix A): C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
3. Identify legal requirements for participation in the occupation.
   a. Describe ways to avoid legal liability problems in the occupation.
   Related Academic Topics (See Appendix A): C3, C4, C6
   Workplace Skills (See Appendix B): WP4, WP6

Suggested Teaching Strategies:

1. *State procedures of leadership to reach an agreement in an orderly manner and personal development opportunities provided students by VICA.*
   a. Allow students to attend a formal meeting to observe "Robert's Rules of Order" in operation. Give handout on procedures. Encourage classroom discussion on procedures.
   b. Discuss leadership opportunities.
2. *Identify desirable personal behavior and characteristics.*
   a. Conduct a class discussion involving personality traits.
   b. Compare public personality traits versus employee personality traits.
   c. Have students interview someone outside school to identify the application of personal work ethics.
3. *Identify legal requirements for participation in the occupation.*
   a. Discuss with students liabilities that may be incurred while not meeting standards and ethics.

Suggested Assessment Strategies:

1. *State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by VICA.*
   a. *Oral and/or written review.*
   b. *Oral and/or written review.*
2. *Identify desirable personal behavior and characteristics.*
   a. *Have students role play desirable personality traits.*
   b. *Oral and/or written review.*
   c. *Oral and/or written review.*
3. *Identify legal requirements for participation in the occupation.*
   a. *Oral and/or written review.*

Suggested References:

VICA. Official Guide for VICA. Washington, D.C.: Vocational Industrial Clubs of America (VICA).

BRICK, BLOCK, AND STONEMASONRY II
UNIT 3: SAFETY (REVIEW) **(5 days)**

Competencies and Suggested Objectives:

1. Describe personal safety rules for working in the masonry industry.
   a Identify and apply terms and definitions for safety.
   b. Identify provisions of the OSHA Act of 1970.
   c. Identify OSHA inspections and citations.
   d. Identify why citations are given.
   e. Identify accidents, their causes, and their prevention.
   f. Identify general safety procedures.
   g. Identify causes of electrical hazards.
   h. Identify proper methods for moving heavy items.
   i. Identify and apply emergency first aid, if necessary.
   j. Identify and apply ABC's of CPR.
   h. Apply eye safety procedures.
   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Describe personal safety rules for working in the masonry industry.*
   a. *Review and discuss applicable rules and regulations on safety.*
   b. *Have students review the lab and classroom to indicate any safety violations.*
   c. *Describe hazards of electrical shock including effects of current, shock avoidance techniques, and shock treatment procedures.*
   d. *Describe accident procedures including getting help, basic first aid, CPR, and accident report form.*
   e. *Describe the proper procedure for moving heavy items.*
   f. *Review the basic requirements of OSHA.*
   g. *Review the school's policy on general safety procedures.*

Suggested Assessment Strategies:

1. *Describe personal safety rules for working in the masonry industry.*
   a. *Oral and/or written exercise.*
   b. *Oral and/or written exercise.*
   c. *Oral and/or written exercise.*
   d. *Oral and/or written exercise.*
   e. *Oral and/or written exercise.*

f. Oral and/or written exercise.
g. Oral and/or written exercise.

Suggested References:

Local Publication, Safety Handbook

BRICK, BLOCK, AND STONEMASONRY II
UNIT 4: POWER TOOLS AND EQUIPMENT (30 days)

Competencies and Suggested Objectives:

1. Demonstrate the ability to safely use power tools.
   a. Identify safety rules when using power tools.
   b. List the parts of the brick saw.
   c. Identify types of saw blades.
   d. Identify safety rules when using the mortar mixer.
   e. Explain the use and care of the mortar mixers.
   f. Explain the use and care of the power grinder.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP4
2. Demonstrate the ability to safely use masonry equipment.
   a. Explain the care and use of the mortar boards.
   b. Explain the care and use of various types of wheelbarrows.
   c. Explain the care and use of the mortar pan and stand.
   d. Explain the care and use of scaffolding.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Demonstrate the ability to safely use power tools.*
   a. Demonstration and explanation.
   b. Discussion with handouts.
   c. Discussion with handouts.
   d. Discussion and handouts.
   e. Discussion and handout.
   f. Discussion and handout.
2. *Demonstrate the ability to safely use masonry equipment.*
   a. Demonstration and handouts.
   b. Discussion and demonstration.
   c. Discussion and demonstration.
   d. Discussion and demonstration.

Suggested Assessment Strategies:

1. *Demonstrate the ability to safely use power tools.*
   a. Application and written test.
   b. Application and written test.
   c. Application and written test.

d. Application and written test.
e. Application and written test.
f. Application and written test.

2. *Demonstrate the ability to safely use masonry equipment.*
   a. Application and written test.
   b. Application and written test.
   c. Application and written test.
   d. Application and written test.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY II
UNIT 5: WALL LAYOUT **(48 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to lay out and build a masonry wall.
   a. Match terms associated with wall layout.
   b. Distinguish between a load-bearing and non-loadbearing wall.
   c. Name the types of wall layouts.
   d. List the bond in wall layout.
   e. Identify a cavity wall.
   f. Identify the methods of layout.
   g. Build a block and/or brick lead to specifications.
   h. Lay up a block and/or brick wall using steel tape bonding.
   Related Academic Topics (See Appendix A): C1, C4, C5, M2, M3
   Workplace Skills (See Appendix B): WP2, WP3, WP5, WP6

Suggested Teaching Strategies:

1. Demonstrate the ability to lay out and build a masonry wall.
   a. Discussion and handout.
   b. Discussion and handout.
   c. Discussion and handout.
   d. Discussion and handout.
   e. Discussion and handout.
   f. Discussion and handout.
   g. Demonstration.
   h. Demonstration.

Suggested Assessment Strategies:

1. Demonstrate the ability to lay out and build a masonry wall.
   a. Written test.
   b. Oral test.
   c. Written test.
   d. Written test.
   e. Written test.
   f. Written test.
   g. Application with checklist.
   h. Application with checklist.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY II
UNIT 6: ANCHORS AND REINFORCEMENT **(25 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to identify and use anchors and reinforcement in masonry walls.
   a. Match terms associated with anchors and reinforcement.
   b. Identify types of anchors and reinforcement used in masonry units.
   c. List reasons for using anchors and reinforcement in masonry units.
   d. Construct a masonry wall using anchors and joint reinforcement.
   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Demonstrate the ability to identify and use anchors and reinforcement in masonry wall.*
   a. Discussion and handouts.
   b. Discussion and handouts.
   c. Discussion and handouts.
   d. Demonstration and checklist.

Suggested Assessment Strategies:

1. *Demonstrate the ability to identify and use anchors and reinforcement in masonry walls.*
   a. Written test.
   b. Oral test.
   c. Written test.
   d. Application with checklist.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY II
UNIT 7: BASIC BLUEPRINT READING AND ESTIMATING **(15 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to identify basic blueprint reading terminology.
   a. Match terms associated with basic blueprint reading.
   b. Identify the types of lines used on blueprints.
   c. Label drawing symbols.
   d. Match abbreviations commonly used on blueprints.
   e. Identify commonly used scales for blueprints.
   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3
2. Demonstrate the ability to estimate material for a masonry project.
   a. Match terms associated with estimating material.
   b. List the rule-of-thumb guidelines for estimating.
   c. Estimate material for a brick job.
   d. Estimate material for a block job.
   e. Estimate material for a stone job.
   f. Estimate material for a given job using a computer.
   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Demonstrate the ability to identify basic blueprint reading terminology.*
   a. Discussion and handouts.
   b. Discussion and handouts.
   c. Discussion and handouts.
   d. Demonstration and handouts.
   e. Discussion and handouts.
2. *Demonstrate the ability to estimate material for a masonry project.*
   a. Discussion and handouts.
   b. Demonstration.
   c. Demonstration.
   d. Demonstration.
   e. Demonstration.
   f. Demonstration.

Suggested Assessment Strategies:

1. *Demonstrate the ability to identify basic blueprint reading terminology.*
   a. Written/oral test.

b. Written/oral test.
c. Written/oral test.
d. Written/oral test.
e. Written/oral test.

2. *Demonstrate the ability to estimate material for a masonry project.*
   a. Written/oral test.
   b. Written/oral test.
   c. Application.
   d. Application.
   e. Application.
   f. Application.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

BRICK, BLOCK, AND STONEMASONRY II
UNIT 8: STONEMASONRY **(5 days)**

Competencies and Suggested Objectives:

1. Demonstrate the ability to identify and apply techniques of stonemasonry.
   a. Match terms associated with stonemasonry.
   b. Define the classifications of stone.
   c. Define the uses of stone in the masonry field.
   d. Describe the various surface finishes of stone.
   e. Construct a stone project.
   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3

Suggested Teaching Strategies:

1. *Demonstrate the ability to identify and apply techniques of stonemasonry.*
   a. Discussion and handouts.
   b. Discussion and handouts.
   c. Discussion and handouts.
   d. Discussion and handouts.
   e. Demonstration.

Suggested Assessment Strategies:

1. *Demonstrate the ability to identify and apply techniques of stonemasonry.*
   a. Written test.
   b. Oral test.
   c. Oral test.
   d. Written/oral test.
   e. Application with checklist.

Suggested References:

BIA. Bricklaying: Brick, and Block Masonry. Reston, VA: Brick Institute of America. 1988.

Bricklaying Curriculum: Principles of Bricklaying. Stillwater, OK: State Department of Education, Curriculum and Instructional Materials Center. 1984.

Kicklighter, C.E. Modern Masonry. South Holland, IL: Goodheart-Wilcox. 1991.

Kreh, R.T. Masonry Skills. Albany, NY: Delmar Publishers. 1982.

SECTION III:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT

1. Air compressor (1)
2. Box, mortar (15 cu. ft.) Metalo (1)
3. Brace, wood hand (4)
4. Brush, masonry (20)
5. C-clamp, vise grip (4)
6. C-clamp, assorted sizes (4)
7. Chalkline (10)
8. Chisel, ripping (1)
9. Chisel set, cold (¼" - 1") (6)
10. Clamp, bar (4)
11. Cutter, bolt - 8 in. and 24 in. (2)
12. Drill, portable (½") (1)
13. Edger, cement (10)
14. Extension cord (25' 12/3 conductor) (2)
15. Eye protection and sterilization chest (w/20 pr. safety glasses) (1)
16. Float, rubber (6)
17. Float, bull (1)
18. Groover, cement (6)
19. Hacksaw (2)
20. Hammer, straight claw (3)
21. Hammer, sledge (3)
22. Hammer, brick (10)
23. Hammer, curved claw (16 oz.) (3)
24. Handsaw, crosscut (3)
25. Hawk, plastering (2)
26. Hoe, mortar (2)
27. Hose, water (50') (2)
28. Hose, air (50') (2)
29. Joiner, sled block (10)
30. Jointer, rake bricklaying (10)
31. Jointer, concave bricklaying (10)
32. Joiner (V) (10)
33. Ladder, step (8') (1)
34. Level, transit w/tripod and leveling rod (1)
35. Level, masonry (15)
36. Mixer, cement, gas or electric powered (1)
37. Pliers, channel lock (12") (2)
38. Pliers, vise grip (2)
39. Plumb bob (2)
40. Rule, folding (6' spacing) (12)
41. Rule, folding (6' modular) (12)
42. Safety kit (OSHA approved) (1)

43. Saw, circular (7½" portable) (1)
44. Scaffold (4 sets)
45. Screwdriver set (Phillips, assorted sizes) (2)
46. Screwdriver set (flat blade, assorted sizes) (2)
47. Set, brick (10)
48. Shield safety (2)
49. Shovel, round point (6)
50. Shovel, square point (6)
51. Square, framing w/rafter chart (6)
52. Square, combination (2)
53. Tamper, hand (1)
54. Tape, steel (1-100') (1-50')
55. Tape, steel (16') (6)
56. Tong, brick (4)
57. Trowel, bricklaying (20)
58. Trowel, tuck point (10)
59. Trowel, cement finishing (4)
60. Wheelbarrow (6 cu. ft.) (3)
61. Wheelbarrow, brick (1)
62. Wrench, pipe (8") (1)
63. Wrench, pipe (10") (1)
64. Wrench set, combination (SAE) (1)
65. Wrench, adjustable (12") (1)
66. Wrench, adjustable (10") (1)
67. Wrench set, sockets w/ratchets and pullhandles (SAE¼", ⅜", and ½" drives) (2)
68. Tool Bags (20)
69. Mortar stands (20)
70. Mortar boards (20)
71. Line blocks with pins (20 sets)

RECOMMENDED INSTRUCTIONAL AIDS

1. Cart, AV (for overhead projector) (1)
2. Cart, AV (for TV-VCR) (1)
3. Computer with operating software with multimedia kit (1)
4. Printer, dot matrix (1)
5. TV-VCR (1)
6. Video out (Microcomputer to TV monitor) (1)

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE
FOR BRICK, BLOCK, AND STONEMASONRY I

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation

_____ 1. Describe local program and vocational center policies and procedures.
_____ 2. Describe employment opportunities and responsibilities.

Unit 2: Leadership and Personal Development

_____ 1. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
_____ 2. Identify desirable personal behavior and characteristics.
_____ 3. Identify legal requirements for participation in the occupation.

Unit 3: Safety

_____ 1. Describe personal safety rules for working in the masonry industry.

Unit 4: Basic Tools and Equipment

_____ 1. Demonstrate the ability to identify and use the tools and equipment.
_____ 2. Demonstrate the ability to care for the tools and equipment.

Unit 5: Masonry Unit

_____ 1. Match terms associated with masonry units to their correct definitions.
_____ 2. Lay out a brick wall using the dry bond method to specifications.
_____ 3. Lay out a block wall using the dry bond method to specifications.
_____ 4. Lay out a stone wall using the dry bond method to specifications.

Unit 6: Mortar

_____ 1. Demonstrate the ability to identify factors concerning mortar.
_____ 2. Demonstrate the ability to mix and apply mortar to specifications.

Unit 7: Wall Layout

_____ 1. Identify terms associated with wall layout.
_____ 2. Build a wall section according to specifications.

Unit 8: Concrete

_____ 1. Demonstrate the ability to explain terms, tools, and equipment associated with concrete.
_____ 2. Demonstrate the ability to perform procedures used in pouring and finishing concrete.

STUDENT COMPETENCY PROFILE
FOR BRICK, BLOCK, AND STONEMASONRY II

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation

_____ 1. Describe local program and vocational center policies and procedures.
_____ 2. Describe employment opportunities and responsibilities.

Unit 2: Advanced Leadership and Personal Development

_____ 1. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided students by the Vocational Industrial Clubs of America (VICA).
_____ 2. Identify desirable personal behavior and characteristics.
_____ 3. Identify legal requirements for participation in the occupation.

Unit 3: Safety (Review)

_____ 1. Describe personal safety rules for working in the masonry industry.

Unit 4: Power Tools and Equipment

_____ 1. Demonstrate the ability to safely use power tools.
_____ 2. Demonstrate the ability to safely use masonry equipment.

Unit 5: Wall Layout

_____ 1. Demonstrate the ability to lay out and build a masonry wall.

Unit 6: Anchors and Reinforcement

_____ 1. Demonstrate the ability to identify and use anchors and reinforcement in masonry walls.

Unit 7: Basic Blueprint Reading and Estimating

_____ 1. Demonstrate the ability to identify basic blueprint reading terminology.

_____ 2. Demonstrate the ability to estimate material for a masonry project.

Unit 8: Stonemasonry

_____ 1. Demonstrate the ability to identify and apply techniques of stonemasonry.